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| APPLICATION NO.                   | FILING DATE          | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------------------------|----------------------|----------------------|---------------------|------------------|
| 10/650,044                        | 08/28/2003           | Ikuya Yamashita      | 101175-00035        | 6945             |
| 4372<br>ARENT FOX I               | 7590 04/14/200<br>LP | EXAMINER             |                     |                  |
|                                   | TICUT AVENUE, N.     | MERKLING, MATTHEW J  |                     |                  |
| SUITE 400<br>WASHINGTON, DC 20036 |                      |                      | ART UNIT            | PAPER NUMBER     |
|                                   |                      |                      | 1795                |                  |
|                                   |                      |                      |                     |                  |
|                                   |                      |                      | NOTIFICATION DATE   | DELIVERY MODE    |
|                                   |                      |                      | 04/14/2009          | ELECTRONIC       |

## Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

DCIPDocket@arentfox.com IPMatters@arentfox.com Patent\_Mail@arentfox.com

| 1)  Responsive to communication(s) filed on 21 November 2008  2a   This action is FINAL. 2b  This action is non-final.  3)  Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under Ex parte Quayle, 1935 C.D. 11, 453 O.G. 213.  Disposition of Claims  4)  Claim(s) 3-8 is/are pending in the application. 4a) Of the above claim(s) is/are withdrawn from consideration. 5)  Claim(s) is/are allowed. 6)  Claim(s) 3-8 is/are rejected. 7)  Claim(s) is/are objected to. 8)  Claim(s) — are subject to restriction and/or election requirement.  Application Papers  9)  The specification is objected to by the Examiner. 10)  The drawing(s) filed on is/are: a) cocepted or b) objected to by the Examiner. Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a). Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d). 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.  Priority under 35 U.S.C. § 119  12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f). a) All b) Some * c) None of: 1 Certified copies of the priority documents have been received in Application No. 2 Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  *See the attached detailed Office action for a list of the certified copies not received.   |   |   |  |  |  |  |  |
|---|---|---|--|--|--|--|--|
| Examiner   Art Unit   1795  |   | Application No.   | Applicant(s)   |  |  |  |  |
| ### MATTHEW J. MERKLING   1795  ### A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 2 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.  ### A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 2 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.  ### A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 2 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.  ### A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 2 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.  ### A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 2 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER IN THE MAILING DATE OF THIS COMMUNICATION.  ### A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 2 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS SET TO EXPIRE 2 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS SET TO EXPIRE 2 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS SET TO EXPIRE 2 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS SET TO EXPIRE 2 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS SET TO EXPIRE 2 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS SET TO EXPIRE 2 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS SET TO EXPIRE 2 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS SET TO EXPIRE 2 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS SET TO EXPIRE 2 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS SET TO EXPIRE 2 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS SET TO EXPIRE 2 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS SET TO EXPIRE 2 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS SET TO EXPIRE 2 MONTH (30) DAYS, WHICHEVER IS SET TO EXPIRE 2 MONTH (30) DAYS OR THIRTY  |   | 10/650,044  | YAMASHITA ET AL.   |  |  |  |  |
| The MALLING DATE of this communication appears on the cover sheet with the correspondence address — Period for Reply  A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.  Lettersians of time raps be available useful the posted letter of the State of the Communication of 3 CP R1 13(6). Into event towers, may a reply be timely filled  If INO pend for reply is specified above, the material substance protect of any department of the state in the resemble appellation to become ANHADORITI (36 U.S.C. § 133). Any reply received by an office their than these mentils after the mailing late of this communication, even if timely filled, may reduce any saturate patient of 20 the communication and protection and patients. Set 7 (7 R 1 1/40).  Status  1) □ Responsive to communication (s) filled on 21 November 2008.  2a) □ This action is FINAL. 2b) □ This action is non-final.  3) □ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under Ex parte Quayle, 1935 C.D. 11, 453 O.G. 213.  Disposition of Claims  4) □ Claim(s) ② 8 is fare pending in the application.  4a) Of the above claim(s) is/are allowed.  6) □ Claim(s) ③ 8 is/are allowed.  6) □ Claim(s) ② 9 is/are rejected.  7) □ Claim(s) ③ 16 is are allowed.  8) □ Claim(s) ② 16 is are rejected to solution.  Application Papers  9) □ The specification is objected to by the Examiner.  10) □ The drawing(s) filed on □ is/are: a) □ accepted or b) □ objected to by the Examiner.  Application Papers  9) □ The provide drawing sheet(s) including the correction is required if the drawing(s) is objected to See 37 CFR 1.121(d).  11) □ The drawing(s) Filed on □ is/are: a) □ accepted or b) □ objected to by the Examiner.  Application Papers  9) □ The drawing(s) Filed on □ is/are: a) □ accepted or b) □ objected to by the Examiner.  Application Provided Provided Communication is objected to by the E | Office Action Summary   | Examiner  | Art Unit   |  |  |  |  |
| A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.  - Exhibitors of time rary to available under the providence of 3° CFR 1.306µ. In no event, however, may a next better the providence of the providence of 3° CFR 1.306µ. In no event, however, may a next be the mainly filled  - If No period for next is specified to exhibit the mainly providence of the communication. Providence of the communication of the providence of the communication, seen if item of the mainly date of this communication, seen if item of the filled providence of the communication, seen if item of the filled providence of the communication, seen if item of the filled providence of the communication, seen if item of the filled providence of the communication, seen if item of the filled providence of the communication, seen if item of the communication, seen item of the communication is seen as a seen of the communication of the seen of the communication of the seen of the communication is seen as a seen of the communication of the seen of the communication of the seen of the communication is seen as a seen of the communication of the seen of |   | MATTHEW J. MERKLING   | 1795   |  |  |  |  |
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| WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.  Elements of the maps be available under the provisible that of the communication. Plants in expensive the text of the communication of the provisible under the provisible u |   | , 10 OFT TO EVELOP - MONTH!   | 0) 00 7 400 7 400  |  |  |  |  |
| 1) Responsive to communication(s) filed on 21 November 2008.  2a  | <ul> <li>WHICHEVER IS LONGER, FROM THE MAILING DA</li> <li>Extensions of time may be available under the provisions of 37 CFR 1.13 after SIX (6) MONTHS from the mailing date of this communication.</li> <li>If NO period for reply is specified above, the maximum statutory period w</li> <li>Failure to reply within the set or extended period for reply will, by statute, Any reply received by the Office later than three months after the mailing</li> </ul> | ATE OF THIS COMMUNICATION 36(a). In no event, however, may a reply be tim vill apply and will expire SIX (6) MONTHS from cause the application to become ABANDONE | N. nely filed the mailing date of this communication. D (35 U.S.C. § 133). |  |  |  |  |
| 2a)  This action is FINAL. 2b)  This action is non-final.  3   Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under Ex parte Quayle, 1935 C.D. 11, 453 O.G. 213.  Disposition of Claims  4   Claim(s)   | Status  |   |  |  |  |  |  |
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| Priority under 35 U.S.C. § 119  12)  Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  a)  All b)  Some * c) None of:  1.  Certified copies of the priority documents have been received.  2.  Certified copies of the priority documents have been received in Application No  3.  Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  * See the attached detailed Office action for a list of the certified copies not received.  Attachment(s)  1)  Notice of References Cited (PTO-892)  2)  Notice of Draftsperson's Patent Drawing Review (PTO-948)  3)  Information Disclosure Statement(s) (PTO/SB/08)   |   | •   | ,  |  |  |  |  |
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| a)  | Priority under 35 U.S.C. § 119  |   |  |  |  |  |  |
| 1. Certified copies of the priority documents have been received. 2. Certified copies of the priority documents have been received in Application No 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  * See the attached detailed Office action for a list of the certified copies not received.  Attachment(s) 1) Notice of References Cited (PTO-892) 2) Notice of Draftsperson's Patent Drawing Review (PTO-948) 3) Information Disclosure Statement(s) (PTO/SB/08)  1 Information Disclosure Statement(s) (PTO/SB/08)   | 12)⊠ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  |   |  |  |  |  |  |
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| 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)  3) Information Disclosure Statement(s) (PTO/SB/08)  Paper No(s)/Mail Date  5) Notice of Informal Patent Application  |   | 1) Interview Summers  | (PTO_413)  |  |  |  |  |
| 3) Information Disclosure Statement(s) (PTO/SB/08)  5) Notice of Informal Patent Application  |   | Paper No(s)/Mail Da   | ate  |  |  |  |  |
|   | 3) Information Disclosure Statement(s) (PTO/SB/08)  | · <b>—</b>  | atent Application  |  |  |  |  |

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## **DETAILED ACTION**

## Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 11/21/08 has been entered.

## Claim Rejections - 35 USC § 103

- 2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:
  - (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.
- 3. Claims 5-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fairlie et al. (WO 00/69773) as evidenced by Sircar et al. (US 6,103,143).

**Regarding claims 5, 7 and 8**, Fairlie discloses a hydrogen supply unit comprising: a reforming means for generating hydrogen gas by reforming a source gas (page 5 lines 31-35);

a first purifying means connected to the reforming means for purifying hydrogen gas reformed by the reforming means (page 5 lines 31-35);

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a first storage means for storing and supplying the hydrogen gas reformed by said reforming means to a first fuel cell (page 20 lines 28-31);

a first supply line connecting the first purifying means to the first storage means and supplying the hydrogen gas from the reforming means to the first storage means (page 5 lines 21-31, where Fairlie discloses that the hydrogen produced can be fed to a number of different types of 'hydrogen fuel users', which includes a fuel cell or a storage container);

a pressurization means (page 2 lines 22-29), provided in the first supply line between the first purifying means and the first storage means, for pressurizing the hydrogen gas to be stored by the first storage means.

While Fairlie does not explicitly disclose a 'second storage means' which feeds a second fuel cell, with a second supply line, such a modification is nothing more than a duplication of parts. Providing a second storage means, second fuel cell, second purifying means, and a second supply line would amount to a mere duplication of parts. Fairlie does disclose multiple users that receive hydrogen from the single hydrogen generating source. It has been held that mere duplication of parts has no patentable significance unless a new and unexpected result is produced. *In re Harza*, 274 F.2d 669, 124 USPQ 378 (CCPA 1960).

Furthermore, Fairlie discloses multiple users that utilize the same hydrogen source (for example, see Fig. 1). Fairlie discloses multiple uses for the hydrogen, such as a stationary generator as well as to power a vehicle (as mentioned above). Fairlie, however does not teach a second purifying means located in the second supply line.

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However, it is well known in the art that different users of a hydrogen source often require different purities (see Sircar col. 8 line 67 – col. 9 line 2). As such, it would have been obvious to one of ordinary skill in the art at the time of the invention to add another purification means (duplicate) in the second supply line to supply a second user with a different purity hydrogen than that which is supplied to a first user.

Regarding limitations recited in claims 5 and 8 which are directed to a manner of operating disclosed system, neither the manner of operating a disclosed device nor material or article worked upon further limit an apparatus claim. Said limitations do not differentiate apparatus claims from prior art. See MPEP §2114 and 2115. Further, process limitations do not have a patentable weight in an apparatus claim. See *Ex parte Thibault*, 164 USPQ 666, 667 (Bd. App. 1969) that states "Expressions relating the apparatus to contents thereof and to an intended operation are of no significance in determining patentability of the apparatus claim.

**Regarding claim 6**, Fairlie further discloses a control system that measures amount of available energy (hydrogen) and operates the hydrogen production means (reformer) based on the amount of hydrogen remaining and demand of the users (see page 20 lines 3-20).

4. Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fairlie et al. (WO 00/69773) as applied to claim 8 above, and further in view of Ogino (JP 10-139401).

**Regarding claims 3 and 4**, while Fairlie discloses a hydrogen storage means that stores hydrogen supplied from a reformer, Fairlie fails to teach:

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• a hydrogen absorbing alloy in the hydrogen storage means,

• said storage means releases the hydrogen gas from a hydrogen absorbing alloy by

use of waste heat of said reforming means or waste heat of said fuel cell,

Ogino also discloses a hydrogen storage means that stores hydrogen supplied from a

reformer.

Ogino teaches a preferable storage means that stores hydrogen by use of a hydrogen

absorbing alloy and subsequently releases said hydrogen from the alloy by heat exchange

from waste heat from the fuel cell (paragraph 108).

As such, it would have been obvious to one of ordinary skill in the art to utilize the

absorbing alloy and hydrogen releasing method of Ogino, in the hydrogen supply unit of

Fairlie, in order to preferably store and remove hydrogen in said storage tank.

Response to Arguments

5. Applicant's arguments filed 11/21/08 have been fully considered but they are not

persuasive.

On pages 7 and 8, Applicant argues that Fairlie does not teach a second purifying means

located in the second supply line. The examiner notes that Fairlie does not explicitly state that a

second purifying means is located in a second supply line, however, as explained above,

providing hydrogen from a single source to multiple users can often require different purities to

each user. As such, adding a duplicate purifying means to a second supply line which leads to a

second user would have been obvious to one of ordinary skill in the art to merely supply a

different purity hydrogen to a second user. The same argument can be said for a second

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pressurization means. Depending on the desired pressure of the hydrogen user, providing a

duplicate pressurization means would have been obvious to one of ordinary skill in the art.

Conclusion

6. Any inquiry concerning this communication or earlier communications from the

examiner should be directed to MATTHEW J. MERKLING whose telephone number is

(571)272-9813. The examiner can normally be reached on M-F 8:30-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Alexa Neckel can be reached on (571) 272-1446. The fax phone number for the

organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

applications is available through Private PAIR only. For more information about the PAIR

system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would

like assistance from a USPTO Customer Service Representative or access to the automated

information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/M. J. M./

Examiner, Art Unit 1795

/Alexa D. Neckel/

Supervisory Patent Examiner, Art Unit 1795